Consumer "Confusion" of Origin and Brand Similarity Perceptions

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Results of a laboratory study show the similarity in physical appearance of two brands (e.g. a store brand and a national brand) is significantly related to consumer perceptions of a common business origin between them. Other factors, particularly the actual origin of the two brands, also contributed to perceptions of common origin. Legal implications are discussed.

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In our fiercely competitive marketplace it is not surprising that companies spend millions of dollars in establishing and protecting trademarks by which their various products and services come to be recognized and valued by consumers [Levy and Rook 1981]. Trademarks serve to identify the product or service so that the consumer can be assured that goods marked with the same name, symbol, or other design characteristics indeed come from the same source and therefore that the marks can be relied upon to signify some standard of quality.

It is also not surprising that some companies choose to imitate characteristics of successful products. Consumers might attribute to these new products perceptions of performance, function, quality, or some other favorable meaning associated with the imitated product. Without such attributions companies would have to spend the substantial sums required to teach the consumer associations or beliefs in conjunction with separate marks. As a result, it is commonplace to see bottle shapes, package designs/graphics, and color schemes in many product categories which quite resemble one another, certainly to a much greater extent than would have been expected by chance had there been independent consideration given to these design or other physical features decisions. As Levitt [1966] has noted, most of what we might see as "new" in the marketplace is not new at all, but is rather "innovative imitation." Indeed, some companies have achieved their niche in the marketplace as "imitators," and the recent advent of trade magazines devoted to private label brands suggests such imitation is certainly not on the decline [see also *Fortune* 1979].

Some of this imitation is legal and some is not. That which is not is often dealt with in the context of trademark infringement litigation (under the Lanham Act) or under some other unfair trade statute. This article will focus upon how similarities between products in their physical appearance may relate to perceptions of product origin and what implications this relationship may have for consumer "confusion" in the marketplace.

Trademark Imitations and "Likelihood of Confusion"

In using the word "imitate," what is typically meant is an effort to reproduce the major ingredients or functional properties of the product, perhaps to emulate promotional thema, advertising/promotional strategy, distribution, price and other components of the marketing mix; not to "copy" those distinctive and stylistic (nonfunctional) aspects of the product which have become trademarks through consumers' perception of these physical stimuli as being uniquely associated with a particular source. Such imitation or emulation of ingredients or function is not per se an unfair trade practice. For example, consumers may form impressions of the positioning or functions of a product or service knowing nothing else about it but the way it "looks" (excluding labeling information). Nevertheless, it may be the case that a "knockoff" (imitation) brand risks sharing sufficient similarities in nonfunctional aspects that the consumer may believe that the two products have the same origin, or indeed, that they are the same product (i.e. one is mistaken for the other). Levy and Rook [1981] cite an estimate that trademark infringers gain over $250 million a year in revenues. Whether intentional or not, it behooves a company to understand the dynamics of stimulus characteristics which may contribute to perceptions of common origin of different products or services.

A trademark enables those who are exposed to it in the marketplace to learn that the goods or services bearing that market emanate from a single source, that is, that the trademark has achieved secondary meaning *[Scott Paper Co.* v. *Scott's Liquid Gold, Inc.* [1978]. Consumers may or may not know from *which* single source the trademark comes; nevertheless the mark has secondary meaning provided that the consumer believes that it stands for or identifies a particular product or service rather than either being understood as the generic term or mark for all brands of that type of product or service, or, not recognized at all as a term or mark, for any or all brands of that type. There is a basis for trademark infringement action if the imitator infringes upon " . . . any word, name, symbol, or device or any combination thereof adopted and used by a manufacturer or merchant to identify and distinguish his goods, including a unique product, from those manufactured or sold by others, and to indicate the source of the goods, even if the source is unknown" [15 U.S.C. 1064 (c), as amended by the Trademark Clarification Act of 1984]. In most cases, perception of common origin may alone be sufficient to legally demonstrate trademark infringement, as established by the Lanham Act.[1] To be entitled to the protection of a trademark, the plaintiff need not show an express intent and design on the part of the defendant to injure the plaintiff's business *[American Radio Stores* v. *American Radio & Television Stores Corporation* 1930, *Air Reduction Company* v. *Airco Supply Company* 1969].

In summary, physical similarities between products may result in the misattribution of source of origin or identity by the consumer. The consumer may believe that the two brands are made by the companies or by companies having a business connection, or may mistake one for the other. Although virtually no systematic research has been reported on this issue, it seems likely that the consumer's perception of product origin may, in some cases, be an important dimension of his or her marketplace behavior. Whether or not consumers are explicitly aware of the source of origin of products or services (e.g. "I only buy genuine Xerox supplies") or are implicitly concerned (e.g. "This must be a good brand because it looks like one I've used before"), a sense of source is apt to play a role in ascription of company attributes, company evaluation, product evaluation, and/or consequent purchase decision.[2]

The research to be described deals only with perception of source of origin and not with mistaken identity.

Study Overview and Predictions

Given the increased market share and number of private label "copy-cat" brands in the marketplace, as well as the recent advent of lawsuits about such imitations [Levy and Rook 1981], we thought this an appropriate place to begin study of the effects of product similarity on consumer confusion of source of origin. Within the context of brands within a product category, we wished to explore whether "substantial" confusion exists about the commonness of origin of national brands and their look-alike private label brands. The market share of private label brands has increased by 2.6 percent from 1971 to 1981. The market share of health and beauty aids, excluding generics, has risen from 2.05 percent in 1971 to 3.16 percent in 1981. These trends are expected to continue in the 1980s [Fitzell 1983]. For our research, we selected four product categories, shampoos, mouthwashes, deodorants, and cold remedies, in which private-label brands were both (1) highly prevalent, and (2) (to date) not made by the national manufacturers whose brands they imitated. Confusion rates involving the business origins of private-label (and national) brands may take one of two forms. Subjects could either rate two brands as having a common origin when in fact they were made by different companies *or* subjects could rate same-origin products as having different origins.[3] The latter type of error between two national brands is presumably intentional on the part of the manufacturer, who may use a multiple-brand strategy without encouraging a company image (such as in the case of P & G). The former type of error is presumably *not* intentional but clearly has implications for trademark infringement; this type of error will be focused upon in the study reported here.

Consumers' prior experiences with private label brands—e.g. that the national brand manufacturers of auto supplies make private-label brands—may have led them to believe that most private labels are made by the national companies. Therefore, we predicted that the rate of confusion about origin for private-national product pairs that were similar in physical appearance and where the private-national brand origins were different would be high relative to overall confusion rates in the product category.

Unless future research shows otherwise, it is clear that the rate of confusion of source can be evaluated only with respect to a "baseline" or "norm" of confusion among other brands within the same product category. We wished to explore further whether clusters or subcategories of brands within the product category provide more adequate comparisons than brands within the entire product class.

Furthermore, we wished to determine whether a *general* relationship exists between the physical similarities of products and consumer perceptions of their commonness of origin. Confusion of origin is expected to increase as physical similarity increases. A competing hypothesis is that confusion occurs only among highly similar pairs of brands (e.g. private-label knock-offs and national brand pairs), and is almost nonexistent for pairs that are moderately similar (e.g. pairs that have a similar name or similar color, but are not alike in most of their physical elements).

Method

Design and Procedure

On slides, subjects were shown pairs of brands of shampoo, cold remedies, deodorants, and mouthwashes.[4] An effort was made to include product categories frequently used by a student population, popular brands in each product category, and selected private-label brands that were similar as well as dissimilar in appearance to popular national brands. Although no a priori predictions were made about the moderating effects of product class, we have included multiple product categories in order to explore possible differences due to product class and to minimize the possibility that findings result from the idiosyncratic nature of a selected category.

Each subject was twice shown either 75 or 77 pairs of products. While viewing each pair one time, subjects were asked to rate the degree of similarity in the overall appearance of the two brands. During another viewing of each pair, subjects indicated whether they thought the two brands were made by the same or different companies, and their confidence of their judgment.[5] Order of these two tasks were counterbalanced, so that within each of four stimulus conditions (described later), about half of the subjects made all similarity judgments first and all origin judgments second. For the other half of the subjects, the origin judgments were made first, followed by similarity judgments.

In order to have a sufficiently large sampling of brands from each product category, 16 shampoos, 13 cold remedies, 13 deodorants, and 8 mouthwashes were used to form pairs. However, since the total number of possible pairs was large (304), the pairs were divided into four groups (75 or 77 in each) consisting of 30 shampoo pairs, 19-20 each of cold remedy and deodorant pairs, and 7 mouthwash pairs. The sorting was systematic so that each brand was represented equally across all four stimulus conditions.[6] The order in which the pairs were shown was randomized within each condition, and this order was held constant for both viewings of the pairs. Further, the slides were shown such that any given brand appeared on the left side of the screen about half the time and on the right side of the screen the other half. Finally, to help eliminate potential biases due to the order in which the pairs were shown, subjects were shown a "group shot" of all brands to be rated subsequently (as well as several other brands within the product category) prior to making judgments about individual pairs.

Each slide's exposure was timed at approximately seven seconds. Only one subject was unable to keep up with this pace; his data were discarded.

After viewing the same set of slides twice (once for similarity, once for origin, ratings), subjects completed questions on product usage. At the end of the the school term, subjects were debriefed as to the purpose of the experiment.

Selection of Brands

Brands were selected for the four product categories from major grocery chains in a large metro area. An effort was made to include at least the most popular brands in each category. A usage verification check[7] showed that indeed, brands selected did represent brands most often used by students. In addition, several (nine) private label brands were included since these brands clearly suggest an imitative strategy and allow us to examine these data separately. Finally, in 40 percent of the cases the name or part of the name of the manufacturer/distributor (e.g. Revlon, Clairol, Dow, Vidal Sassoon, Vicks, private outlet) was visible on the front of the package, either as part of the brand name or separately. This proportion was somewhat larger for shampoos (56%) than for mouthwashes (38%), cold formulas (38%),

or deodorants (23%). Most of the brand pairs tested (90%) were different-origin pairs; 10 percent were pairs that were made by the same company.

Sample

The sample consisted of 112 students, most of whom were participating to receive extra credit in an introductory marketing class. The remainder (less than five percent of the sample) were MBA students from an advertising class.[8] In order to participate, subjects were asked to sign up for one of eight alternative times scheduled for slide presentations. Experimental group sessions ranged in size from 9 to 21. Final sample sizes for the four conditions ranged from 24 to 30.

Measures and Instructions

Similarity Ratings

Subjects were asked to make similarity ratings on scales ranging from "0" (extremely dissimilar) to "10" (extremely similar). Subjects were carefully instructed to judge whether the pair were similar *in overall appearance,* not in their functions or quality attributes. "We want you to tell us whether or not the two products look alike in appearance.... [For example, we] do *not* want you to tell us whether the two products are similar in what they do for your hair." An illustration was provided to clarify this difference, and subjects did not appear to have any difficulty in understanding the nature of the task.

Origin Ratings

A second set of judgments involved asking subjects "to look at slides that show two products and tell us whether you think they're made by the same company or by different companies." Two judgments were completed for each of the pairs. First, subjects checked either "same" or "different" companies. Second, they were asked: "How confident are you of this judgment?" Confidence ratings were made on scales ranging from "0" (not at all confident) to "10" (extremely confident).

Subsequent analyses report an origin index ranging from -10 to +10, obtained by multiplying the dichotomous measure (scored +1 for same and -1 for different) by the confidence rating.

Final Questionnaire

Finally, subjects were asked to report the brands of shampoo, cold remedies, deodorants, and mouthwashes they had *used* at least once in the past year (including brands not shown on the slides).[9]

Results

Regression Analyses

We examined the effects of physical similarities on perceived commonness of origin through regression analyses. The moderating influences of product class and past usage were included in the analysis, since both have relevance to legal decisions of infringement. The highly similar private-national brand pairs were included as a separate predictor in the equation.

Perceived origin (scores ranging from -10 to +10) was the criterion measure. Predictor variables included perceived physical similarity (0-10 scale), a dummy code for private label-national brand pairs, recent brand usage (one dummy code, use of at least one of the two brands, or not),[10] product class (three dummy codes), and actual origin (one dummy code, made by same company or not), as well as interaction terms shown in Table 1.[11] An individual level analysis was performed across all subject x brand pair combinations.

Table 1. Independent Variables, Regression Coefficients, and Perceptions of Common Origin

Independent Variables	Regression Coefficient	Standardized Beta Coefficient	F-value	p-value	Mean	Standard Deviation	Cumulative Multiple R
Perceived Similarity	.12	.072	6.98	.008	3.89	3.10	.116
Store-National Brand Pairs (Dummy code)[a]	4.06	.154	5.10	.024	.04	.20	.147
Usage of One or Both Brands (Dummy code)	-.61	-.045	6.71	.010	.19	.40	.161
Actual Origin (Dummy code)	3.66	.200	16.46	.000	.09	.29	.327
Product Class (Dummy codes)							
Cold Remedy	.51	.042	2.68	.102	.26	.44	.330
Mouthwash	-1.28	-.070	6.38	.012	.09	.29	.331
Deodorant	1.13	.093	11.19	.001	.26	.44	.331
Similarity x Store-National Pairs	-.08	-.027	.15	.698	.36	1.78	.332
Similarity x Usage	-.13	-.036	4.03	.045	.40	1.55	.334
Similarity x Actual Origin	.29	.092	1.37	.243	.42	1.68	.336
Similarity x Product Class							
Similarity x Cold Remedy	-.02	-.008	.09	.770	.99	2.30	.337
Similarity x Mouthwash	.05	.015	.27	.603	.42	1.64	.337
Similarity x Deodorant	-.16	-.076	5.31	.021	1.15	2.57	.338
Actual Origin x Usage	1.74	.045	2.37	.124	.02	.14	.338
Actual Origin x Product Class							
Actual Origin x Cold Remedy	1.27	.030	.75	.386	.02	.13	.339
Actual Origin x Mouthwash	5.71	.123	14.59	.000	.01	.11	.352
Actual Origin x Deodorant	-1.96	-.076	3.00	.084	.04	.20	.353
Similarity x Usage x Actual Origin	-.46	-.069	5.53	0.19	.09	.80	.354
Similarity x Product Class x Actual Origin							
Similarity x Mouthwash x Actual Origin	-.33	-.040	1.03	.311	.06	.63	.355
Similarity x Cold Remedy x Actual Origin	.08	.011	.06	.802	.08	.78	.355
Similarity x Deodorant x Actual Origin	.19	.047	.51	.476	.22	1.30	.356
Intercept	-3.05		227.92	.000			

[a]All dummy variables were coded 1 for the presence of that variable and 0 for the absence.

Preliminary regression analyses indicated that the data could not be pooled across order conditions. In particular, when order was included in the prediction equation, the interaction term involving order (similarity followed by origin measures vs. origin followed by similarity measures) and perceived similarity was significant ($F(1,8459) = 13.40$, $p < .001$).[12] The relationship between similarity and origin was stronger in the first order condition, suggesting that measurement of similarity of brands may have biased subsequent origin ratings. Therefore, only observations in the second order condition were used in subsequent analyses. The resulting number of observations was 4316.

Relation Between Similarity and Origin Perceptions

Results, shown in Table 1, show the significance of the hypothesized effects as well as the relative contribution of each factor to perceived origin.[13]

Perceived similarity contributed significantly to perception of common origin ($F(1,4294) = 6.98$, $< .01$). The more similar the two brands, the more likely they were to be judged as having a common origin. Interestingly, this relationship occurred regardless of whether the products were, in fact, made by the same company (i.e. the similarity x actual origin effect was nonsignificant, $F(1,4294) = 1.37$, $p = .24$). The main effect for the private-national brand pairs was also significant ($F(1,4294) = 5.10$, $p = .024$) suggesting an independent contribution of these pairs over and above their similarity. Private-national brand pairs were more likely to be judged as common origin, despite the fact that none of these pairs were common-origin pairs. The interaction of similarity and private-national brand pairs was nonsignificant ($F < 1$), suggesting that the relationship between similarity and origin was not solely a function of the inclusion of private-national brand pairs in the stimulus set. As shown in Table 1, the relative contribution of the two "similarities" factors were, although significant, quite small (standardized beta coefficients are .072 for perceived similarity and .154 for private-national pairs).

Moderating Effects

Recent brand usage of one of the two brands appears to have moderated the similarity-origin relationship ($F(1,4294) = 4.03$, $p < .05$). The negative coefficient for the interaction between perceived similarity and usage suggests that recent users of one or both brands were less likely than nonusers to rely on physical similarity as a cue for judging common origin. The significant three-way interaction effect between similarity, usage, and actual origin ($F(1,4294) = 5.53$, $p = .02$) suggests that users were less likely than nonusers to rely on physical similarity, particularly when the two brands were actually made by the same company. These effects are not surprising, since people who have recently used one or both of the brands should be more likely to correctly identify the product's source, and therefore less likely to rely on physical similarity between brands as a cue to company origin.

The similarity-origin relationship was to some extent moderated by product class (it did not hold up for the deodorant class), but a pooled test (of the incremental R) of the three similarity x product class interaction coefficients did not reach significance ($F(3,4302 = 2.03$, $p > .05$).[14]

Actual Origin

Since the combined main effects of the two similarity predictor variables (perceived similarity and private-national pairs) accounted for only 2.2 percent of the variance in perceived origin, we examined whether other variables were better predictors of perceived origin. As shown in Table 1, actual origin had a significant impact on perceived origin ($F(1,4294) = 16.46$,

Table 2. Intercorrelations of Independent and Dependent Variables

	Similarity	Store-Nat'l	Usage	Actual Origin	Cold Remedy	Mouthwash	Deodorant	Sim x Store-Nat'l	Sim x Usage	Sim x Actual Orig	Sim x Cold	Sim x Mouth	Sim x Deod	AO x Usage	AO x Cold	AO x Mouth	AO x Deod	Sim x Use x AO	Sim x Mouth x AO	Sim x Cold x AO	Sim x Deod x AO
Perceived Similarity																					
Store-National Brand Pairs (Dummy code)[a]	.33																				
Usage of One or Both Brands (Dummy code)	-.00	-.01																			
Actual Origin (Dummy code)	.07	-.07	.01																		
Product Class (Dummy codes)	-.01	.00	-.06	-.06																	
Cold Remedy																					
Mouthwash	.07	.05	.02	.06	-.19																
Deodorant	.11	-.04	.05	.16	-.35	-.19															
Similarity x Store-National Pairs	.34	.98	-.01	-.07	-.01	.06	-.05														
Similarity x Usage	.21	.04	.53	.06	-.02	-.00	.05	.04													
Similarity x Actual Origin	.26	-.05	.02	.78	-.03	.04	.16	-.05	.11												
Similarity x Product Class																					
Similarity x Cold Remedy	.34	.10	-.03	-.01	.73	-.14	-.25	.10	.05	.05											
Similarity x Mouthwash	.24	.14	.01	.04	-.15	.80	-.15	.15	.03	.08	-.11										
Similarity x Deodorant	.43	.02	.03	.16	-.26	-.14	.76	.01	.12	.29	-.19	-.11									
Actual Origin x Usage	.04	-.03	.28	.43	-.02	.02	.07	-.01	.27	.37	.01	-.01	.07								
Actual Origin x Product Class																					
Actual Origin x Cold Remedy	.06	-.03	.01	.40	.22	-.04	-.08	-.03	.07	.37	.24	-.03	-.06	.19							
Actual Origin x Mouthwash	.02	-.02	-.00	.36	-.07	-.36	-.07	-.02	-.00	.27	-.05	.28	-.05	.15	-.01						
Actual Origin x Deodorant	.08	-.04	.01	.67	-.13	-.07	.36	-.04	.03	.59	-.09	-.05	.33	.30	-.03	-.02					
Similarity x Usage x Actual Origin	.12	-.02	.23	.36	-.00	-.01	.07	-.01	.34	.45	.05	-.00	.12	.83	.21	.06	.26				
Similarity x Product Class x Actual Origin																					
Similarity x Mouthwash x Actual Origin	.09	-.02	-.02	.29	-.05	.29	-.05	-.02	.01	.36	-.04	.37	-.04	.07	-.01	.79	-.01	.06			
Similarity x Cold Remedy x Actual Origin	.12	-.02	.02	.34	.18	-.03	-.06	-.02	.11	.44	.30	-.03	-.05	.19	.85	-.01	-.02	.27	-.01		
Similarity x Deodorant x Actual Origin	.22	-.04	.01	.54	-.10	-.05	.29	-.04	.06	.75	-.07	-.04	.44	.24	-.02	-.02	.80	.32	-.02	-.02	
Perceived Origin	.12	.12	-.07	.28	.03	-.01	.06	.12	-.03	.26	.07	.02	.07	.10	.15	.1	.15	.07	.13	.14	.15

[a]All dummy variables were coded 1 for the presence of that variable and 0 for the absence.

$p < .001$) and, shown in Table 2, was the predictor most highly correlated with the criterion (alone accounting for 8 percent of the variance in perceived origin). Common-origin pairs were more likely than different-origin pairs to be (correctly) perceived as made by the same company.[15]

Cluster Analyses

To further understand the nature of perceived origin judgments and their relationship to similarity judgments, ADDTREE cluster analyses were performed on data averages across subjects for all possible brand pairs for each type of judgment (similarity and origin) and for each product class (shampoo, cold remedy, deodorant, and mouthwash). The ADDTREE computer algorithm, recently developed by Sattath and Tversky [1977], is particularly appropriate for these data since it is best used for proximity data on sets of objects to analyze both common and distinctive features [see Johnson and Tversky 1984, Pruzansky, Tversky, and Carroll 1982].[16]

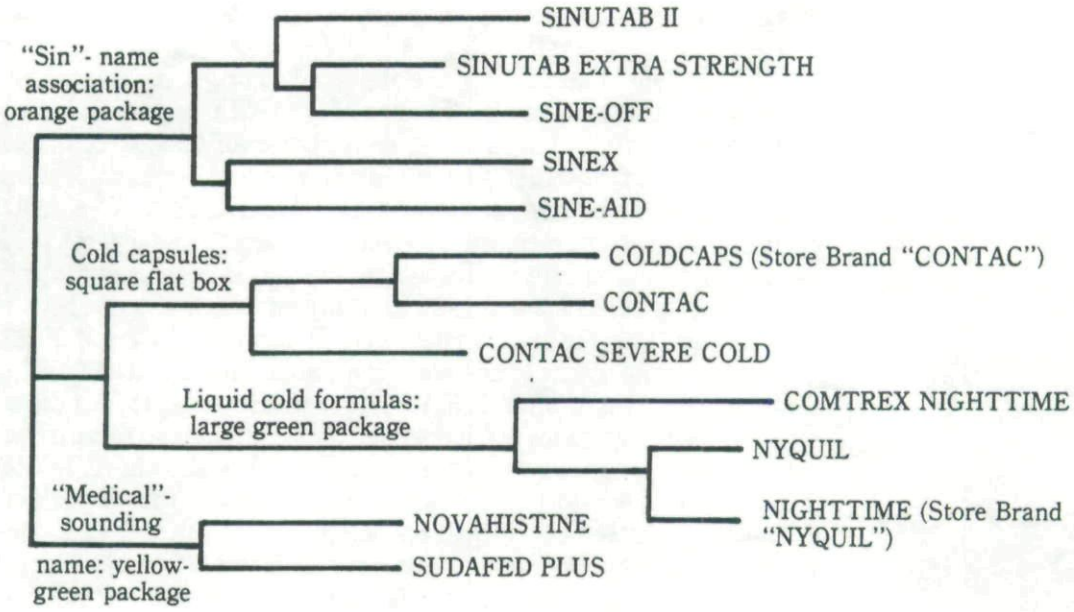
Two goodness-of-fit indices were computed for each ADDTREE scaling solution, as shown in Table 3. R(MON) squared represents the proportion of monotonically explained variance, i.e. the relationship (squared product-moment correlation) between the distances as modelled in ADDTREE and the monotone transformation of the original similarities (or origin) data. R(LINEAR) squared represents the proportion of linearly explained variance, i.e. the relationship (squared product-moment correlation) between the distances as modelled in ADDTREE and the original similarities (or origin) data.

Summary statistics for the eight cluster analyses (by judgment and product class), shown in Table 3, indicate that, with the exception of the shampoo origin ratings, about 80 percent or more of the variance was explained in each analysis. Examples of these diagrams for cold remedies are shown in Figure 1. The terminal nodes represent the unique or distinctive features of each brand and higher order links represent the common or shared features of brands of the corresponding cluster. Results

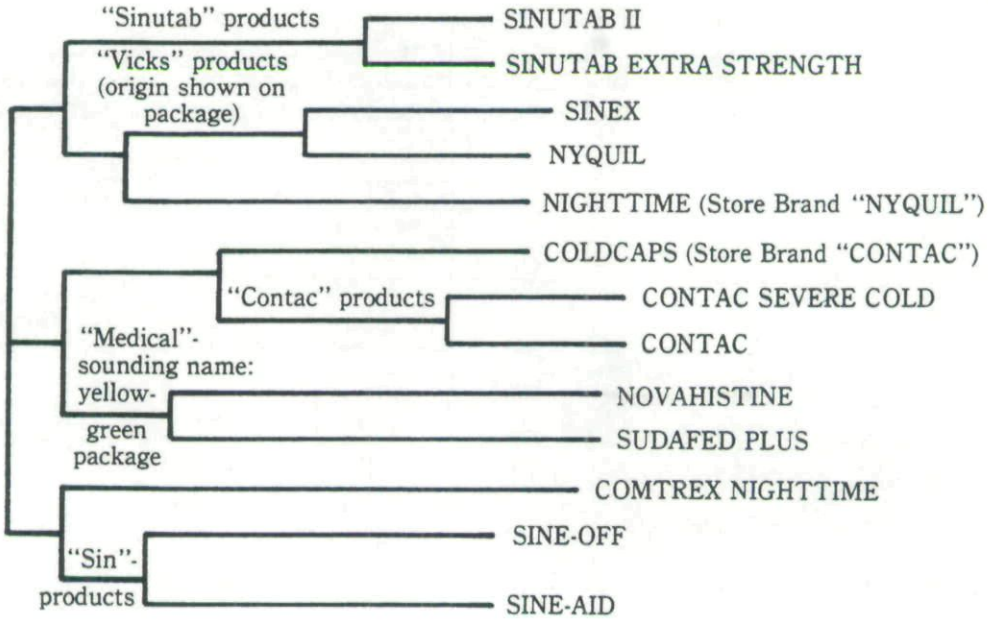
Table 3. **Results of ADDTREE Cluster Analyses, Each Product Category, Second Order Condition**

	Stress Value	R(MON) Squared	R(LINEAR) Explained
Similarity Judgments			
Shampoo	.075	.864	.782
Cold Remedy	.050	.967	.930
Deodorant	.040	.988	.954
Mouthwash	.039	.982	.830
Origin Judgments			
Shampoo	.065	.672	.588
Cold Remedy	.041	.931	.877
Deodorant	.038	.941	.813
Mouthwash	.045	.967	.915

Figure 1. **Results of ADDTREE Cluster Analyses, Cold Remedies, Second Order Condition**



a. Cold Remedy - Similarity Judgment Results



b. Cold Remedy - Origin Judgment Results

were highly interpretable, and examples of labels have been provided post hoc in Figure 1 to describe the segment cluster [see also, Johnson and Tversky 1984]. The distance between two brands is represented by the length of the path joining them.

Two findings are important to the study of confusion of origin. First, private-label brands clustered with their physically similar national brands in 13 out of the 18 cases across the four product classes, in analyses of both perceived similarity and perceived origin (e.g. Nyquil and Nighttime in Figure 1).

Second, physical similarities influenced origin clusters both directly and indirectly. Direct effects occurred in the different-origin pairs that were similar in name (e.g. Sine-off and Sine-aid) or shape and/or color (e.g. Flex and Suave, Agree and Herbal Essence, Novahistine and Sudafed Plus) were clustered together. Analogously, same-origin pairs clustered together when the brand name contained the same trade name, spelled or pronounced the same way (e.g. Ban and UltraBan, Arrid and Arrid Extra Dry, Contac and Severe Cold Formula Contac, Sinutab II and Sinutab Extra Strength). The product-moment correlations [cf. Johnson and Tversky 1984] between the mean perceived similarity and mean perceived origin judgments were significant ($p > .01$) for two product categories ($r(118) = .33$ for shampoos and $r(76) = .30$ for cold remedies) and approached significance in a third ($r(26) = .29$) for mouthwashes, also showing some support for the effects of perceived similarity. As in the regression analyses, the exception is the deodorant product category, which showed no relationship between similarity and origin ($r(76) = .09$ $P > .05$).[17]

Indirect effects of similarity occurred in the case of shampoos in which two *different* store brands clustered together. That is, one store brand (Sears) "Dandruff Shampoo" clustered with a different store brand (K-Mart) "Everyday Shampoo." Since the two national brands imitated (i.e. Head & Shoulders and Pert) had a common origin (P & G), the imitators were apparently perceived as having been made by the same company due to their respective similarities to the two national brands rather than due to factors common to the two store brands.

Finally, one implication and use of cluster analysis data may be to empirically derive a basis of comparison of an imitator-imitated brand pair with other brand pairs in the product category. In almost all cases of trademark infringement a benchmark comparison rate of confusion should be necessary for which a particular brand pair can be judged. In some instances, this rate of confusion may be an average rate across all members of a product category. In other instances—e.g. where the members of a product category are very heterogeneous—an appropriate rate of comparison might be all members of a particular cluster of brands, such as the clusters generated by the present data. Obviously, the confusion rates would vary depending upon the particular cluster shown in Figure 1. The frame of reference for judging confusion rates should strongly influence what that rate will be. These possibilities are discussed more fully later.

Confusion Rates

In Table 4 we show the estimated rates of source confusion among different-origin pairs of products. These rates are present for (a) the different product categories and (b) different subcategories within each product category. Consistent with other data, confusion rates for private-national brand pairs tend to be significantly higher (z's range from 1.95 to 3.05, $p. \leq .05$, for the four product categories) than overall confusion rates. Furthermore, it is interesting to observe that the overall confusion rates are approximately the same for the four product categories.

Table 4. **Confusion Rates for Different-Origin Pairs[a] by Product Category, Level of Similarity, and Private-National vs. Other Brand Pairs**

	Overall	Similarity of Pairs[b] Low	Moderate	High	Private-National Pairs[c]
Shampoo	24% (1626)[d]	20% (964)	27% (384)	33% (275)	53% (73)
Cold Remedies	23% (1042)	20% (566)	22% (242)	34% (233)	61% (46)
Deodorants	26% (922)	25% (433)	29% (194)	25% (294)	56% (32)
Mouthwashes	22% (342)	12% (149)	23% (87)	35% (106)	57% (30)

[a]Confusion rates represent the average proportion of respondents who rated the (different-origin) pairs as made by the same company.

[b]Similarity was measured on a scale ranging from 0 (not at all similar) to 10 (extremely similar). "Low" similarity includes all pairs for which the individual subject gave similarity ratings ranging from "0" to "3." "Moderate" similarity included responses ranging from "4" to "6"; high similarity included responses ranging from "7" to "10."

[c]Private-national pairs represent the data from the 9 private-label pairs matched with their physically similar national pairs.

[d]Sample sizes (number of subjects x number of brand pairs) from which percentages were estimated are shown in parentheses.

Discussion

Private-Label Products

Private label products were often perceived as having the same origin as the national brands with which they shared similarities. Regression analyses showed that these private-national brand pairs were more likely than other pairs to be judged as having the same origin. Cluster analyses showed that private label brands were clustered with their "matched" national brands. Confusion rates show higher error for private-national pairs than for other different-origin pairs. Together these findings suggest that the potential confusion of consumers is exceedingly high for private label brands.

Why do a significant proportion of our samples say private labels are made by their national look-alikes? A likely possibility is that our samples did not know who made the private-label brands, and therefore they had to "guess" or hypothesize on the basis of prior knowledge. Past experience may have led them to believe that national brands *sometimes* make private-label products; therefore, the "guess" rate would be inordinately high for such products. If this interpretation is correct, it has two important implications. First, it implies that many consumers are *not* educated about the origins of generics and private-labels, and this education is badly needed to counteract mistaken perceptions about product origin in the marketplace.

Second, it behooves both private-label and national brand manufacturers to understand and correct these misperceptions. In the case of private-label manufacturers, infringement may occur to the extent that consumers believe private labels are made by national manufacturers when, in fact, they are not. Therefore, educating consumers about private-label origins should reduce the likelihood of consumer confusion, and ergo, the possible illegalities associated with the imitations. In the case of national brand manufacturers, it is important to secure and protect the secondary meaning associated with a mark.[17] To the extent that national brand manufacturers do not protect their marks (through legal actions or otherwise); they will lose their subsequent ability to protect them.

Clearly, some degree of imitation is not only prevalent in the marketplace, but necessary to increase consumer learning and facilitate the categorization process of products and brands within product categories. A new brand of "baby shampoo" is more easily and quickly categorized as a baby shampoo if it shares similarities to baby shampoos already on the market. Therefore, if it is advertised as "gentle" and is packaged in a clear yellow tear-shaped bottle, consumers will quickly learn that it is a baby shampoo and will presumably benefit from the similarities between it and previously learned shampoos. Therefore, from the perspective of the consumer, imitation per se is not necessarily problematic. However, to the extent that the consumer also believes that the products have the same source of origin (or, in some cases, the same quality attributes), the consumer may be misinformed.

Similarity-Origin Relationship

In addition to the effects reported for private-label brands we find that, across a representative sample in four product categories, the physical similarities between two brands influenced whether the brands were judged to have a common origin. This shows that, contrary to expectations, the relationship between similarity and origin is not solely a function of highly similar pairs. Moderately similar pairs should also lead to moderate levels of origin confusion.

Regression analyses across all individual observations also suggested that the combined explanatory power of the two similarities measures was, although significant, quite low. Additional analyses suggested that similarity may sometimes operate indirectly on origin judgments. For example, as shown in the cluster diagrams, the perception that a private label brand was made by a national brand manufacturer also generalized to less physically similar brands made by that same company (e.g. in the case of the private label brand "look-alike" Contac, Contac, and Severe Cold Formula Contac). Also, when two private label brands corresponded to two national brands made by the same company, the two store brands were perceived as having been made by the same company.

The factor that contributed more variance to origin than similarity was the actual commonness of origin between two brands. Although this suggests that our sample may have an abstract notion of who makes which brands, an important question about product origin that is not addressed in the present research is the *amount* and *nature* of the information consumers typically have about product origin. Future research might address the question of how consumers typically make judgments, either implicitly or explicitly, about which brands are made by a given manufacturer. It seems likely that many consumers have very little information about product origin and do not use product origin as an explicit consideration in their product evaluation and/or purchase decision. If so, the consequences of imitation may have only indirect implication for product purchase. For example, the effects of imitation and perceived commonness of origin of two products may operate through the eventual loss in distinctiveness of the trademark of the imitated product.

Confusion "Base-Rates"

Given the setting in which our study was conducted, we would not attempt to argue that we have established "base-rates" of consumer confusion. Quite the contrary. The setting may have artificially biased the rate of confusion either upwards or downwards due to (1) the use of introductory marketing students in our sample, (2) the artificiality of the experimental setting, and (3) idiosyncrasies of the product categories tested. Marketing

students as consumers may be more highly sensitized to issues relating to product origin. This sensitivity may be augmented, too, by the experimental situation and the desire to provide "correct" responses. Furthermore, students may be less (or more) apt than most consumers to become involved in their purchase decisions, and have somewhat different judgments than consumers in general about what brands are made by the same manufacturer.[18] And certainly the rate of "origin" confusion is likely to be greater than the rate of mistaken purchase (another method for legally establishing confusion). However, the present results are important in that they emphasize (1) that the base rates of confusion tend to be similar for all four product categories, (2) that base rates of confusion vary significantly with physical similarities between products and (3) that within a product category, the confusion rates vary significantly.

An important implication of these findings is that the confusion rate of a particular brand pair should be evaluated with respect to a representative set of other pairs. Depending on the circumstances, this set of pairs might be a representative sampling of pairs within a product category, or it may be a set of pairs with which the particular brand pair shares similarities, such as the pairs with which it clusters on origin or similarity. One might contrast two dandruff shampoos, for example, against the average confusion rate among *all* dandruff shampoos, if in fact dandruff shampoos tended to cluster together. These arguments are somewhat analogous to those made by Gardner [1975] regarding normative beliefs in the case of deceptive advertising. In order to show illegalities, it is necessary to demonstrate that the level of confusion is evaluated empirically with respect to a designated norm—a norm which includes other brand pairs that are in certain respects similar to the brand pair of interest.

Future Research Directions

Future research might seek to understand the conceptions, if any, that consumers have about product origin. Is product origin sometimes (perhaps implicitly) a salient feature used in product evaluation? Different consumers may hold different perceptions of product origin (e.g., "all major brands are made by the same company," "store brands are made by national brands"). Consumers may also exhibit differences in the manner in which they seek brand-origin information, or in the degree to which they are influenced by such factors as physical similarities between brands. Also, can physical similarities between products have marketing consequences that are independent of product origin perceptions? Conceivably, physical similarities between products do impact on evaluative attribute perceptions and resulting purchase behaviors. Is the typical private label brand competing with the "look alike" national brand for the *quality* attributes defined by the national brand, e.g., "the high quality dandruff shampoo," or for the descriptive or *functional*" qualities—e.g. the "cinnamon tasting red mouthwash"? Alternatively, do private/store brands essentially compete with one another from store to store, e.g., Sears store brand shampoo versus K-Mart brand shampoo?

To acquire evidence applicable in a legal case or to establish absolute base rates of confusion across different product categories, research in a natural setting might be important. However, laboratory research is valuable for the development and testing for hypotheses of consumer origin perceptions, and in many cases may be sufficient in determining the likelihood of confusion between two marks. Basic research on trademark and origin issues is clearly lacking. The present research describes a number of different directions that might be taken to explore these issues, and their implications, in greater depth.

Notes

1. Nor is it necessary to show that the second comer has damaged the good will or reputation of the first or has diverted sales (i.e. that some consumers have mistakenly purchased the one thinking it to be the other, or that the trade has ordered the one believing it to be or to have the same sources as the other [*Air Reduction Company* v. *Airco Supply Company*, supra]. Establishing a likelihood of confusion is alone sufficient to suppose that the plaintiff's business will be adversely affected [*E.I. du Pont de Nemours & Co.* v. *DuPont Safety Razor Corp.* 1951].
2. Furthermore, to the extent that perceptions of common attributes between two brands go beyond the functional attributes of the product, which connote its nature and use, and extend to perceptions of product origin, product quality, or product evaluation [e.g. Miaoulis and D'Amato 1978], the new product may be trading on the accumulated good will that the existing product features have earned. In many cases, the quality or performance of the imitator may be inferior to that of the prior existing product. If so, the consumer is misled or misinformed (whether intentionally or not) about the quality attributes of the product, and the quality reputation of the prior existing product may suffer.
3. In our study to be reported, across all pairs and product classes, the former rate of error was somewhat higher (35%) than the latter (26%). The hit-rate was higher and approximately the same for same-origin pairs (64% reported these pairs were made by the same company) and different-origin pairs (70% said these were made by different companies).
4. Pictures of these products are available upon request to the authors.
5. There are many different forms of questions that may be put to consumers in evaluating their state-of-mind regarding source of origin of two or more products. Variants of the approach used in the research have been used in such surveys [e.g., *Squirt Co.* v. *Seven-Up Co.* 1979].
6. For example, a given brand of shampoo was shown four times in each condition, a given brand of deodorant was shown three times in three conditions and four times in the other condition.
7. Analyses were conducted to determine whether the set of brands rated in each product category included brands frequently used by the subject population. In general, this criterion was met. Of the frequently used shampoo brands, (i.e., brands reported used by at least 10% of the sample), 90.0 percent were brands included within the shampoo stimulus set. Comparable proportions for deodorants, cold remedies, and mouthwashes were 75.0 percent, 83.3 percent, and 100.0 percent, respectively.
8. Although the use of students as subjects has been duly criticized in certain situations, when research is conducted for theory confirmation purposes there is a lesser problem with such a sample, as noted by Calder, Phillips, and Tybout [1981]. Although we cannot know a priori whether our findings will represent a theory that is generalizable across populations, across settings, or across time, we felt that, in this case, it was desirable to reduce variance from a heterogeneous sample to test the hypotheses relating similarity perceptions to origin judgments.
9. Subjects also reported which brands they had *purchased* in the past year. (These responses were largely redundant with usage responses.)
10. Initially, we included two usage dummy variables, one for usage of *one* of the two brands or not, the other for usage for *both* brands or not. However, these variables were collapsed into a single variable since the number of observations in which both brands were used was small (1%).
11. Contributions of interaction terms that were less central to the study objectives were also tested through hierarchial regression analyses. Analyses verified that these interactions contributed little variance to perceived origin ratings and could be omitted from the regression equation.
12. There were a total of 112 subjects x 75-77 pairs = 8506 observations. The number of observations reported in analyses in the text is slightly less due to 17 cases of missing data. (Six of these cases resulted from nonresponses to perceived similarities items and 11 cases from nonresponse to perceived origin items; all but four of the latter were from a single subject.)
13. The latter data are helpful to the extent that the sample size is large and the 75-77 observations of each subject were not independent.

14. The coefficient involving deodorant was significant [see Table 1] and suggests that the relationship between similarity and origin was not as strong for deodorants as for other product classes. This interaction for deodorants was not contingent upon whether the brand rates were *actually* made by the same company (i.e. the three-way interaction with actual origin was nonsignificant). Therefore, regardless of whether or not the brands had a common origin, subjects were less likely to rely on similarity as a cue to judge origin when the brands were deodorants. Deodorants were unique in that all deodorants had either one of two shapes (spray can or roll-on box shape), and, possibly, further physical distinctions between deodorants were not meaningful to subjects.

15. Findings also showed that brand users were more likely than nonusers to judge pairs as having different origins ($F(1) = 6.71, p = .01$), regardless of whether *in fact* brand pairs were of common or different origin (i.e. the actual origin x usage interaction was nonsignificant, see Table 1). Perhaps users were more likely to view the brands they use as distinctive from other brands (and therefore as made by different companies).

    Perceived origin ratings also varied by product class. Deodorant and cold remedy pairs were more likely than mouthwash and shampoo pairs to be judged as same-origin. Given that the number of same-origin pairs included in the study did, in fact, vary by product class these effects are best interpreted in terms of the product class x actual origin interaction terms. The incremental R^2 adding the three actual origin x product class interactions was significant ($F(3,4298) = 16.32$, $p < .01$). Results show a significant tendency for common-origin mouthwash pairs to be accurately judged as same-origin. In contrast, deodorants were more likely than nondeodorants to be *incorrectly* rated as different origin when, in fact, they were made by the same companies. Name similarity, rather than package or other physical similarities, may have been important in judging deodorant origin. If so, differences in names of same-origin pairs (e.g. Dry Idea and Right Guard) may have led to inaccuracies in origin judgments.

16. ADDTREE is distinct from most cluster procedures in that it circumvents two limitations of most traditional hierarchial methods. First, intra-cluster distances between brands may be greater than inter-cluster distances, making it possible for two brands to belong to different clusters and yet be the two closest brands. Second, a brand outside a cluster is not equidistant from all brands within the cluster. Recent applications of ADDTREE have reported interpretable tree structures and better account for some similarities data than do spatial representations and more traditional hierarchial procedures [Sattath and Tversky 1977, Johnson and Tversky 1984]. In the present case, ADDTREE and more traditional hierarchial clustering procedures yielded comparable results (only results of ADDTREE structures will be reported here).

    The input data for ADDTREE consists of a symmetric matrix of similarities data. These data were used to separate the objects (products) into clusters. Subsequently, the distances between the clusters were determined using a least squared criterion. These clusters and distances were represented in terms of a tree structure.

17. In the case of private label products, *registered* trademarks (such as a brand name) are typically not imitated; rather, the package shape, color, label, and other package features are imitated. Therefore, to demonstrate infringement it is necessary to show first, that the package features have secondary meaning (i.e. people have come to associate the package features with the brand name or the company of origin) and second, that a "likelihood of confusion" exists between that brand and the imitated one.

18. In the present research we have tried to minimize these tendencies by using familiar product categories that are frequently used by a student population, and by making responses to questionnaire items anonymous. Thus, while it seems likely that our major findings (e.g. the effects of actual origin and perceived similarity on perceived origin) could be generalizable to other subject populations, we recognize that the potential differences between this and other samples should be noted.

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